**Module 5:**

1. **What is Automation Testing?**

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* Automation testing is a type of software testing that uses automated tools and scripts to execute test cases, rather than performing the tests manually.
* Instead of a human tester manually checking the software, automation testing tools run tests automatically, compare actual outcomes with expected outcomes, and report the results.
* Common Goals of Automation Testing:
* Increase testing speed and efficiency
* Improve test coverage
* Reduce human error
* Enable continuous testing in CI/CD pipelines
* Repeat tests easily across multiple versions

1. **Which are the browser supported by selenium ide?**

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* Selenium IDE (Integrated Development Environment) is a browser extension that allows testers to record, edit, and run test cases without needing to write code manually. It's designed primarily for automating web applications for testing purposes.
* Browsers Supported by Selenium IDE:

Google chrome

Mozilla fire-fox

Microsoft edge

1. **What are the benefits of Automation testing?**

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Automation testing offers several powerful benefits, especially for large or frequently updated software projects.

Benefits of Automation Testing:

* **Faster Execution**

Automated tests run much faster than manual tests.

Ideal for regression testing and running tests on every code change

* **Increased Test Coverage**

You can run hundreds or thousands of test cases across different browsers, devices, and configurations that would be time-consuming manually.

* **Improved Accuracy**

Eliminates human errors that may occur during manual testing.

Provides consistent and repeatable results.

* **Saves Time and Cost in the Long Run**

Initial setup may require effort and cost, but over time, it reduces the cost of repeated testing and shortens the release cycle.

* **Supports Continuous Integration / Continuous Deployment (CI/CD)**

Easily integrates with CI/CD tools like Jenkins, GitHub Actions, or GitLab CI for automated testing pipelines.

* **Reusability of Test Scripts**

Once written, test scripts can be reused across multiple test cases, versions, and environments.

* **Improves Test Efficiency**

Tests can be run 24/7 on multiple machines or in the cloud, enabling parallel testing and reducing overall test time.

* **Better Bug Detection**

Automated tests often catch regression bugs or edge cases that might be missed during manual testing.

* **Detailed Reporting**

Most automation tools provide logs, screenshots, and reports that help in quickly identifying the point of failure.

* **Scalability**

Easily scalable for large test suites and multiple environments or platforms (web, mobile, API, etc.).

1. **What are the advantages of Selenium?**

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Selenium is one of the most popular automation testing frameworks, especially for web applications. It offers a range of advantages that make it a go-to choice for many QA engineers and developers.

Advantages of Selenium:

* **Open Source and Free**

Selenium is free to use with no licensing costs.

Supported by a large open-source community, which contributes plugins, documentation, and support.

* **Supports Multiple Browsers**

Works with major browsers like:

* + Chrome
  + Firefox
  + Edge
  + Safari
  + Opera

Ensures cross-browser compatibility testing.

* **Supports Multiple Programming Languages**

You can write tests in several languages, including:

* + Java
  + Python
  + C#
  + JavaScript (Node.js)
  + Ruby
  + Kotlin
* **Cross-Platform Compatibility**

Works on all major operating systems:

* + Windows
  + macOS
  + Linux

Enables testing across different environments.

* **Integration with Other Tools**

Integrates well with:

* + Test frameworks (JUnit, TestNG, N-Unit, etc.)
  + CI/CD tools (Jenkins, GitHub Actions, Bamboo)
  + Reporting tools (Allure, Extent Reports)
  + Cloud platforms (Browser-Stack, Sauce Labs)
* **Supports Parallel and Distributed Testing**

You can run tests in parallel using tools like Selenium Grid, reducing execution time.

* **Supports Mobile Testing (via Appium)**

Selenium WebDriver can be extended to test mobile apps (Android/iOS) using Appium.

* **Powerful and Flexible Web Automation**

Can handle dynamic web elements, AJAX, pop-ups, alerts, and more.

Allows deep customization of test scenarios.

* **Active Community and Documentation**

Vast community support and regularly updated documentation.

Lots of tutorials, courses, forums, and GitHub projects to learn from.

* **Browser Automation Beyond Testing**

Can also be used for tasks like:

* + Web scraping
  + Automating repetitive browser tasks

1. **Why testers should opt for selenium and not QTP?**

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Choosing between Selenium and QTP (now called UFT – Unified Functional Testing) depends on many factors like project needs, team skills, application type, and budget. However, many modern testers prefer Selenium over QTP/UFT for several compelling reasons.

* **Cost Efficiency**

Selenium is free, while QTP/UFT requires expensive licenses.

For startups and agile teams, this makes Selenium much more accessible.

* **Language Flexibility**

Selenium supports multiple programming languages.

QTP is restricted to VBScript, which is outdated and less commonly used today.

* **Cross-Platform & Cross-Browser Testing**

Selenium runs on Windows, Linux, and macOS.

QTP works only on Windows.

* **Open Ecosystem**

Selenium integrates with a wide range of open-source tools like:

* TestNG/JUnit
* Cucumber (for BDD)
* Allure/Extent Reports
* Docker/Selenium Grid
* QTP is a closed system, which can limit customization.
* **Modern Web App Compatibility**

Selenium is better suited for modern web technologies like:

React, Angular, Vue

AJAX-heavy applications

It keeps up with browser updates faster.